

AMENDMENTS TO THE CLAIMS

Please amend pending claims as indicated below. The following listing of claims will replace all prior versions and listings of claims in the application:

Claim 1 (currently amended): A method of operating a robot cleaner comprising:

(a) generating an internal map of an area comprising a plurality of subgrids, each subgrid comprising a plurality of cells;

(b) generating a subgrid map for each subgrid of the internal map, wherein the subgrid map has a higher resolution than resolution of the internal map;

(a) causing at least one wheel to move, wherein the wheel is coupled to a body including a cleaning unit;

(b) (c) causing the body the robot cleaner to travel on a surface along a travel path, the surface being definable by a plurality of cells from one subgrid to another subgrid in a spiral;

(e) (d) during the traveling in each subgrid:

(i) gathering data corresponding to each traveled cell and each non-traveled cell of the subgrid;

(ii) at least partially cleaning the traveled cells of the subgrid; and

(iii) storing [[the]] status data for each cell, the stored data representing a map in the subgrid map;

(d) (e) determining which part of the subgrid map has a highest percentage of non-traveled density of uncleaned cells;

(e) (f) using the subgrid map to calculate a travel path to the part of the subgrid that has a highest percentage of non-traveled density of uncleaned cells;

(f) (g) using the subgrid map to determine if the travel path is free from obstructions; and
(g) (h) if path is obstructed, rotating the travel path by a predetermined number of degrees
and repeating steps (e)-(f) (f)-(g); and
(h) (i) if path is not obstructed, repeating steps (b)-(g) (c)-(h).

Claim 2 (canceled):

Claim 3 (currently amended): The method of claim [[2]] 1, wherein [[the]] each subgrid [[map]]
is cleaned in a serpentine clean.

Claim 4 (currently amended): The method of claim 1, wherein ~~the map is composed of cells~~
generating an internal map comprises generating the internal map using dead reckoning.

Claim 5 (currently amended): The method of claim [[4]] 1, wherein ~~the cells are marked as~~
~~obstacle, cleaned or uncleaned~~ wherein status data includes at least cleaned, uncleaned or
obstruction.

Claim 6 (currently amended): The method of claim [[4]] 1, wherein ~~the map is composed of cells~~
~~and~~ a width of a cell corresponds to portion of effective cleaning unit width of the robot cleaner.

Claim 7 (currently amended): The method of claim 1, wherein ~~the map is composed of cells and~~
~~wherein~~ a cell can be set cleaned with a single straight line path segment of robot cleaner.

Claim 8 (currently amended): The method of claim 1, wherein the internal map is a room map.

Claim 9 (currently amended): The method of claim 1, wherein ~~the map contains information about a region being cleaned~~ generating an internal map comprises selecting subgrid sizes and generating a subgrid map comprises selecting cell sizes.

Claim 10 (currently amended): The method of claim [[9]] 1, wherein information in the subgrid map is cleared after the ~~region~~ subgrid is cleaned.

Claim 11 (currently amended): The method of claim [[9]] 1, wherein a new subgrid map is prepared for a next ~~region~~ subgrid being cleaned.

Claim 12 (currently amended): A robot cleaner comprising:

- a body including a cleaning unit;

- at least one wheel coupled to the body;

- at least one motor operatively coupled to the at least one wheel;

- at least one processor operatively coupled to the at least one motor;

- at least one input device operatively coupled to the at least one processor;

- at least one sensor operatively coupled to the at least one processor; and

- at least one memory device storing a plurality of instructions which are

executable by the at least one processor to:

- (a) generate an internal map of an area comprising a plurality of subgrids, each subgrid comprising a plurality of cells;

(b) generate a subgrid map for each subgrid of the internal map, wherein the subgrid map has a higher resolution than resolution of the internal map;

(a) (c) cause the at least one wheel to move thereby causing the body to travel on a surface along a travel path the surface being definable by a plurality of cells from one subgrid to another subgrid in a spiral;

(b) (d) during the traveling in each subgrid:

(i) gather data corresponding to each traveled cell and each non-traveled cell of the subgrid;

(ii) at least partially clean the traveled cells of the subgrid; and

(iii) store [[the]] status data for each cell, the stored data representing a map in the subgrid map;

(e) (e) determining determine which part of the subgrid map has a highest percentage of non-traveled density of uncleaned cells;

(d) (f) using use the subgrid map to calculate a travel path to the part of the subgrid map that has a highest percentage of non-traveled density of uncleaned cells;

(e) (g) using use the subgrid map to determine if the travel path is free from obstructions; and

(f) (h) if a path is obstructed, rotate the travel path by a predetermined number of degrees and repeating steps (d)-(e) (f)-(g); and

(g) (i) if a path is not obstructed, repeat steps (b)-(g) (c)-(h).

Claim 13 (canceled)

Claim 14 (currently amended): The robot cleaner of claim ~~[[13]]~~ 12, wherein ~~[[the]]~~ each subgrid ~~[[map]]~~ is cleaned in a serpentine clean.

Claim 15 (currently amended): The robot cleaner of claim 12, wherein ~~the map is composed of~~ cells generating an internal map comprises generating the internal map using dead reckoning.

Claim 16 (currently amended): The robot cleaner of claim ~~[[15]]~~ 12, wherein ~~the cells are marked as obstacle, cleaned or uncleaned~~ status data includes at least cleaned, uncleaned or obstruction.

Claim 17 (currently amended): The robot cleaner of claim 12, wherein ~~the map is composed of cells and~~ a width of a cell corresponds to a portion of effective cleaning unit width of the robot cleaner.

Claim 18 (currently amended): The robot cleaner of claim 12, wherein ~~the map is composed of cells and wherein~~ a cell can be set cleaned with a single straight line path segment of the robot cleaner.

Claim 19 (currently amended): The robot cleaner of claim 12, wherein the internal map is a room map.

Claim 20 (currently amended): The robot cleaner of claim 12, wherein ~~the map contains~~
~~information about a region being cleaned~~ generating an internal map comprises selecting subgrid
sizes and generating a subgrid map comprises selecting cell sizes.

Claim 21 (currently amended): The robot cleaner of claim ~~[[20]]~~ 12, wherein information in the
subgrid map is cleared after the ~~region~~ subgrid is cleaned.

Claim 22 (currently amended): The robot cleaner of claim ~~[[20]]~~ 12, wherein a new subgrid map
is prepared for a next ~~region~~ subgrid being cleaned.

Claims 23-101 (canceled).